Gender Stereotyping and Female Pupils’ Perception of Studying Advanced Level Sciences: A Survey of One Province in Zimbabwe

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In spite of advances in the field of science and technology, females are still under-represented in the sciences. The study sought to explore the perceptions of female pupils regarding studying Advanced level sciences in one province in Zimbabwe. The descriptive survey design was employed. One hundred female pupils learning sciences at either Ordinary or Advanced level in ten selected secondary schools in the province participated in the study. Data was collected through questionnaires and focus group discussions. Findings indicate that female pupils have a negative perception towards studying Advanced level sciences and that the low participation of female pupils in Advanced level sciences stem from their lack of confidence in studying subjects that are regarded as masculine in the society. Schools need to implement programmes designed to alter the negative perception of female pupils towards participation in Advanced level sciences and educate them on the benefits derived from studying advanced sciences.

Key words: gender stereotyping, perception, participation, science education, female pupils

Gender stereotyping is prevalent in different settings including the home, school and workplace. The society perpetuates certain behaviours among males and females through the way they are brought up (Mapfumo, Chireshe and Peresuh, 2002). African culture has; since its origins looked down upon girls, placing them in subservient positions that grow even larger as they grow. This is better exemplified by the treatment of the girls in issues such as education. It is believed that men are born with certain natural abilities, aptitudes or talents that are different from those of women (Mapfumo, et al, 2002).

As a way of improving human life the Zimbabwean government according to the Education Act (Amended in 1991) proclaimed education a basic human right. Thus, there are efforts to increase the participation of female pupils in schools and to improve the quality of their school experience. In this way, educational institutions are assumed to be places of learning, growth and empowerment, particularly for female pupils who are the marginalized group. The issues of equality and inclusion underpin the very foundations of the society we live in; how we relate to each other at local, national and international level.

Education is a human right with immense power to reform; on whose foundation rest the cornerstones of freedom, democracy and sustainable development (United Nations Educational, Scientific and Cultural Organisation (UNESCO), 1998). As a result there is no higher priority, no mission more important, than that of “Education for All”. Within this wider context it is broadly accepted that education and schooling have a pivotal role in preparing future citizens to embrace the richness and potentialities of diversity and difference.

While there has been a steady progress towards the empowerment of girls in both
primary and secondary education in terms of enrolments, Vavrus (2002: 544) states, “the demand for girls’ schooling is generally high, but cultural and economic forces keep this desire from becoming a reality for many girls.” The Education Act (2004) provides for equal access to education in Zimbabwe. This is the case in theory but in reality, the story is different as there are challenges faced by the female pupils particularly their participation in Advanced level sciences.

Women continue to drop out, perform more poorly and have less access to education than men (Gordon, 1994; Dorsey, Gaidzanwa and Mupawaenda, 1989). Thus, there has been a perpetuated disparity between males and females in both secondary and tertiary education in Zimbabwe. The disadvantaged female pupils run the risk of being neglected and eventually failing if the system falls short in addressing their needs. Sinyolo cited in Moyo (2003: 171) says, “about 125 million children world-wide are deprived of the right to education every day, leaving most of them in poverty. Girls account for three-quarters of this figure.”

According to Gordon (1995) equality of educational opportunities involves both equal access to schooling as well as equal treatment of boys and girls within the school. Sexual equality of educational opportunity has received some attention in Zimbabwe and elsewhere (Gordon 1995). Dorsey (1996) supports Gordon (1995) by asserting that it is now widely accepted that women have the potential to pursue careers, which were traditionally reserved for men. Accordingly, efforts are being made through education systems of countries to accommodate the changing educational needs of female pupils. UNESCO (2005) suggested that quality does not refer only to the level of attainment but also to the ways in which schools and education in general manage to attract and retain female pupils in the system.

The Nziramasanga Commission of Inquiry into Education and Training in Zimbabwe presented its findings noting, among other things, that gender disparities persisted at all levels of education (Nziramasanga Commission, 1999). As a follow up, the government launched the National Gender Policy in March 2004 whose goal, inter alia, was “to eliminate all negative economic, social and political policies, cultural and religious practices that impede equality and equity of sexes” (National Gender Policy, 2004: 3). On education it has strategies such as incorporating gender issues in all curricula at all levels and eliminating all forms of discrimination against boys and girls in education and skills training, which include science and technology. The importance of such strategies has been underscored by Mayor quoted in UNESCO (1999) who states that,

In a world increasingly shaped by science and technology, scientific and technological literacy is a universal requirement ... it is vital to improve scientific and technological literacy among women and girls, whose unique educational function within the family makes them such a major determinant of the attitudes of present and future generations (p.6).

Most studies focus on the issue of participation of girls in science from other people’s (teachers and parents) perspective. This study explored the perceptions of the female pupils towards participation in Advanced level sciences.

Statement of the Problem
In most secondary schools in the province understudy, many female pupils study sciences at Ordinary level. However, the number of those studying Advanced level sciences is significantly low. It is important to understand the reasons why fewer girls make the transition to studying Advanced level sciences from the point of view of the female pupils themselves.

LITERATURE REVIEW

Sex role socialisation
“The socialisation process begins the day we are born and ends the day we die” (Ballantine, 1993:104). Young girls learn
their gender roles in part through socialisation. Gender, notes Thorne (1993) is a highly visible part of social and individual identity. Social organisations and institutions can play a role in constructing gender inequality (Sadker and Sadker, 1994). Thus, the organisations in which young girls spend their time, such as schools play a role in constructing their identity.

Girls are not simply passive victims, but participate in their own identity formation by making selections out of the choices presented to them. Girls “act, resist, rework and create” the roles they are assigned (Thorne, 1993:3). For example, although girls may have difficulty in imagining themselves in the unfamiliar role of scientist, girls may themselves choose to reject an identity they see as socially isolated or unbalanced (Margolis and Fisher, 2002).

In a study by UNICEF (2004), teachers expressed how primary socialisation led to female subordination and male domination both in the home and at school. Socialisation of girls and home activities include confinement to the kitchen, lack of freedom of expression and activities centred on serving other people. Boys on the other hand were given freedom of expression, adventure, experimenting and viewed as future breadwinners. Teachers viewed this as the basis of girls’ poor self-esteem, weak career aspirations and focus on the arts rather than the science related subjects; while boys sought the more dominant positions in society and hence were better motivated to participate in science. The socialisation experience influences what boys and girls learn about their roles and what they see as possible for them as they grow to adulthood.

Many educationists share a conviction that the school system, through its curriculum, can provide a fix to societal problems (Chinyani, 2010). This is premised on the understanding that once something becomes school knowledge, its implementation is legitimised and is deemed worthwhile knowledge. However, cognisance has to be taken of the fact that the school system, per se, is not the panacea to societal problems. The solution is partly a function of the type of curriculum that the school offers, as Gordon (2000) asserts:

*An important aspect of education, which channels children into gender roles, is the curriculum that they are permitted to study.*

Gordon (2000) further notes that at independence, the country inherited a gender differentiated curriculum where subjects were typed as masculine and feminine. This, in a way, channels children into gender roles in the wider society.

This is buttressed by Bowman (2007) who highlighted that the social context for science learning may send messages that most of the notable accomplishments in science are attributable to men. For example, the image of scientists is predominantly an image of men, making it difficult for girls to picture themselves in that role. Young children tend to believe that scientists should be male. Girls are presented with little in the way of role models. Thus the boys and girls perceive science subjects as masculine as they learn that the great ‘scientists’ were men.

According to Abbot and Wallace (1987) knowledge is packaged into discrete ‘subjects,’ which become either masculine or feminine and pupils are not encouraged to see the connections between them or to question those classifications. In this case, girls may view science as a male domain that is difficult to reconcile with their sex-role identity. Bowman (2007) highlighted that girls have internalised cultural ideas about who ‘belongs’ in science. From the teachers’ point of view girls have low self-confidence regarding their performance in science. Thus, there is a negative feedback loop between social and cultural pressures and girls’ self-perceptions that they cannot do well in science (Bowman, 2007).

**The participation of female pupils in science**
Several studies reveal a mixture of promising and discouraging findings in terms of the situation of girls and science with reference to achievement, attitudes
and participation. Hardin, Hilderbrand and Klainin in Opare (1996) highlighted the important role of education in building the capacity for science and technology and the persistently low enrolment of girls in science, particularly the physical and applied sciences, in the secondary and tertiary levels of education have aroused the concern of science educators, researchers, and policy-makers the world-over. This concern about females stem from the realization that the under-representation translates into under-utilization of female talent, which in turn exacerbates the bottleneck in the development of science and technology capacity building.

Blessing and Schwartz cited in Brotman and Moore (2008) have shown that girls often perceive science as difficult, uninteresting or leading to an unattractive life-style. In addition Andre, Whigham, Hendrickson and Chambers (1991) highlighted that even where girls enjoy and are involved in science class; girls’ perceptions of their competence in the subject are lower than boys.

In contrast to the repeated findings of overall negative attitudes, a few studies indicated findings that are more positive. Harwell (2000) interviewed elementary and middle school girls and found that they are positive and confident about science and have strong opinions about women doing science as well as about kinds of activities they would like to see happening in the science classroom. Research studies that investigated the extent of girls’ participation in science also had mixed findings and context seems to play a role in the variation of the results across studies. For example, girls in the United States of America and The Netherlands, across ages, choose fewer science courses than boys (Van Langen, Rakers-Mombag and Dekker cited in Brotman and Moore, 2008). However, Greenfield (1996) found that in Hawaii, girls enrol in advanced mathematics and science courses more frequently than boys. Her context seems to be one where teaching strategies and college entrance requirements may improve girls’ participation.

Some researchers have reported that what both the ‘feminist empiricists’ and the ‘liberal feminist critics’ seem to agree is that females in principle will produce exactly the same scientific knowledge as males provided that sufficient rigour is undertaken in scientific inquiry (Sinnes, 2005). They also believe that initiatives that build on the assumption that females and males are equal in their approach to science, and that inequality in science and science education is caused by political, educational and social factors external to science, would be expected to focus on removing these external obstacles. There is need therefore to give boys and girls exactly the same opportunities and challenges.

Girls in primary school see themselves on an equal footing with boys and many do outstrip the boys academically (UNESCO, 1999). But usually in the secondary school, changes caused by the onset of adolescence and girls’ perceptions of who they are and how they should behave begin to affect their career choices (Ballantine, 1993). Thus, by the time, girls are seniors; their plans and values for future participation in the work place closely parallel the actual sex difference in occupation. The girls seem to internalise the prevailing expectations and many give up especially when it comes to the study of sciences. One of the negative attitudes of girls appears to be the acceptance of the myth that boys are better in sciences than girls. This could result in girls’ lack of confidence to participate in sciences at Advanced level.

Dorsey (1996) highlighted that in Zimbabwe generally girls do not do well in science subjects. At Advanced level, the performance of girls is more comparable to boys, but percentage passes by subject is lower for girls, except for English and the vernacular languages. While the causes for this under-achievement of girls are complex and probably cumulative, the transmission of cultural values and beliefs about the sexes through early socialisation and secondary socialisation in the school seems
to be a significant contributing factor to the continued under-achievement of girls. Theoretical explanations for the difference tend to focus on socialisation and cultural expectations patterns, which differ for boys and girls.

Mapfumo, et al (2002) highlighted that in Zimbabwe mostly, parents and teachers influence pupils’ job perceptions. Parents and teachers believe that males are suited for the ‘heavy,’ ‘dirty,’ and ‘dangerous’ jobs, while females are suited for the ‘light,’ ‘clean’ and ‘safe’ jobs. This is perhaps, why boys’ and girls’ perceptions about male and female jobs are similar to those of the parents and teachers. It is worth noting that the boys’ and girls’ parents and relatives may already be in those ‘feminine’ and ‘masculine’ jobs and that the pupils follow suit. Mapfumo et al (2002) found that parents were chief influences in career choice, but it is not clear whether they take into account the children’s abilities, interests and demands. This study focussed on the perceptions of female pupils themselves towards participation in Advanced level sciences.

**Objectives of the study**

This study sought to:

1. establish the perceptions of girls towards the performance of girls studying Advanced level sciences.
2. find out the sources of motivation for girls to study sciences at Advanced level.
3. determine whether or not girls aspire to engage in science related careers.

**Method**

A descriptive survey was employed since it was deemed appropriate for gathering information about the present existing condition so as to “present a picture of the specific details of a situation, social setting, or relationship” (Neumann cited in Kriel 2007:14).

Hundred female pupils from 10 purposively sampled secondary schools in the province participated in the study. The schools were chosen on the basis that that they offered science subjects at both Ordinary and Advanced levels. Stratified random sampling was done to choose the sample. The female pupils were first grouped into two groups; Ordinary level and Advanced level pupils. Numbers were assigned for each female pupil in the main list compiled from the attendance register at each of the participating secondary school. These numbers were written on pieces of paper and drawn from a box without replacing. The process was first done to select participants from the Ordinary level group of female pupils and then to the group that consisted of Advanced level female sciences pupils. The process was repeated at each one of the ten schools participating in the study until a sample size of one hundred was reached.

A self-administered semi-structured questionnaire was completed by the pupils. The first section centred on the demographic data of the participants; the second section sought information on the female pupils’ perceptions on studying and, confidence to participate in, science subjects. The self-administered questionnaire was an appropriate method of data collection since it was easy to administer and the target population under-study was literate. With the use of the questionnaire, respondents were guaranteed anonymity such that they were free to give accurate and authentic information without fear of reprisals. The study also employed focus group discussions which tended to validate the findings of the questionnaire. Not only did they facilitate better understanding of the reasons behind the female pupils’ responses, but they revealed some strong, almost emotional responses to the topic under-study. Krueger (1988:42) pointed that, “focus groups have high validity, which is due in large part to the believability of comments from participants... people open-up in focus groups and share insights that may not be available from individual interviews, questionnaires, or other data sources.” Two focus group discussions were held with
female pupils in both co-educational and single-sex schools to avoid polarization and bias. There were two focus groups discussions: one composed of eight form four female pupils and; the other one consisted of eight Advanced level sciences female pupils. USAID (1996) highlighted that each focus group should have between 7 to 11 people to allow the smooth flow of conversation. Thus, the focus group discussions facilitated carefully planned discussions, designed to obtain the perceptions of the female pupils towards participation in Advanced level sciences in a persuasive environment.

A pilot study of the instruments was done and some questions on the questionnaire targeted at asking the female pupils on the participation of girls in the science and technology industry were removed. This was due to the researchers' realisation that the questions were better addressed to personnel in industry.

Data collected from the questionnaire was analysed using descriptive statistics. Fink and Kosecoff (1985) point out that descriptive statistics is most commonly used and is the basis for more advanced techniques for data analysis.

**Presentation and discussion of findings**

**Characteristics of the participants**

The demographic information of the participants in the study is summarised in Table 1.

Most of the respondents (52%) were in the age range 17-18 years. All the respondents at Ordinary level indicated that they were studying Integrated Science and Mathematics. This is in line with the Ministry of Education, Sport, Arts and Culture policy, which regards science and mathematics as compulsory subjects at Ordinary level among others (Ministry of Education, Sport and Culture and UNICEF, 2000).

From the information given in Table 1, it can be noted that nine (9) respondents (45%) were studying Biology at Advanced level, with only one respondent studying Physics. The fewer number of girls studying Physics at Advanced level might be as a result of a limited number of female pupils who enrol for the subject at Ordinary level.

The findings are in agreement with Graham (2001) who noted that by extension, female students in the schools tend to opt for subjects like Home Economics and at most Biology. However, Chemistry, Physics, Mathematics and Further Mathematics are male-dominated zones.

**Table 1: Girls studying science subjects at Ordinary and Advanced levels (n=100)**

<table>
<thead>
<tr>
<th>Age Range (Years)</th>
<th>Ordinary level (n)</th>
<th>Advanced level (n)</th>
<th>Total (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15-16</td>
<td>42</td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>17-18</td>
<td>38</td>
<td>14</td>
<td>52</td>
</tr>
<tr>
<td>19+</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

**Enrolment in science subjects at Ordinary level (n=80)**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>(n)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>39</td>
<td>48.75</td>
</tr>
<tr>
<td>Chemistry</td>
<td>25</td>
<td>31.25</td>
</tr>
<tr>
<td>Integrated Science</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Mathematics</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Physics</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Physical Science</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

**Enrolment in science subjects at Advanced level (n=20)**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>(n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Biology</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>Chemistry</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Mathematics</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Physics</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>
Girls’ performance in Advanced level science examinations

The participants were asked to rate the performance of girls in Advanced level sciences examinations. In most of the schools participating in the study the results of the national examinations are displayed on the school notice board. The responses are indicated in Table 2.

Table 2: Rating of girls’ performance in Advanced level sciences examinations (n=100)

<table>
<thead>
<tr>
<th>Subject/Rating</th>
<th>Above Average</th>
<th>Average</th>
<th>Below Average</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>20</td>
<td>54</td>
<td>26</td>
<td>100</td>
</tr>
<tr>
<td>Biology</td>
<td>60</td>
<td>25</td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td>Chemistry</td>
<td>10</td>
<td>60</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Mathematics</td>
<td>2</td>
<td>15</td>
<td>83</td>
<td>100</td>
</tr>
<tr>
<td>Physics</td>
<td>0</td>
<td>5</td>
<td>80</td>
<td>85</td>
</tr>
</tbody>
</table>

Many respondents (60%) of the female pupils rated the performance of girls in Biology ‘above average.’ However, most respondents indicated the performance of girls in Physics and Mathematics as being ‘below average.’ A few respondents (15%) highlighted that it was difficult for them to rate the performance of girls in Physics, as the subject was not being offered or there are no girls enrolled to participate in the subject at some of the secondary schools.

The findings from the questionnaire are similar to those from the focus group discussion with the Advanced level female pupils, who noted that in most co-educational high schools, there are only a few girls who enrol for Advanced level Physics. One participant explained:

A friend of mine, doing form 3 told me that at their school (Girls High) pupils are scoring As’ in Physics at ‘A’ level. But here at our own school, I have never seen or heard of a girl scoring such high grades. (Pupil 13)

This concurs with the research findings by Robinson and Gillibrand (2004) who suggested that girls do better in certain subject areas such as mathematics and science when boys are not in the class. Jimenez and Lockheed (1989) noted that girls in girl-only schools scored higher in mathematics while boys scored higher than girls in co-educational mathematics classes. These differentials were largely because of peer effects. In girls-only mathematics and science classrooms, research indicates that girls are engaged in learning more of the time, show more cooperative learning behaviour and identify better with their female classmates than when they are in co-educational classes (Jimenez and Lockheed, 1989). In addition, studies show there are no differences in what girls and boys can learn; but there may be different ways to engage and teach girls as compared to boys (UNESCO, 2007). Thus an understanding of how to teach boys and girls to excel in the sciences is crucial for teachers. This might go a long way in improving girls’ achievement levels even in co-educational schools.

Awards to girls for outstanding performance in sciences

On the question of the number of female pupils who have been awarded prizes for an outstanding performance in Advanced level sciences, the respondents’ answers are indicated in Table 3.
Table 3: Awards for an outstanding performance in sciences (n=80)

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Number of girls awarded for an outstanding performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(n)</td>
</tr>
<tr>
<td>Agriculture</td>
<td>22</td>
</tr>
<tr>
<td>Biology</td>
<td>30</td>
</tr>
<tr>
<td>Chemistry</td>
<td>49</td>
</tr>
<tr>
<td>Mathematics</td>
<td>55</td>
</tr>
<tr>
<td>Physics</td>
<td>75</td>
</tr>
</tbody>
</table>

It can be noted that most respondents (80%) supplied figures of female pupils who have been awarded for an outstanding performance in sciences at Advanced level. However, a few respondents (20%) highlighted that at their schools they have not held any function to reward outstanding pupils.

Very few respondents (3%) indicated that ‘more than 4’ female pupils have been awarded for performing well in Biology. This shows that of all the sciences done at Advanced level, female pupils are performing better in Biology. However in Physics most (75%) of the respondents indicated that not even a single female pupil has been honoured for excelling in the subject. The findings concur with those highlighted on the performance of female pupils in Advanced level Physics, which was rated as being ‘below average.’

Gender gaps in academic performance, especially in mathematics, continue to be observed worldwide (Guiso, Monte, Sapienza, and Zingales, 2008; Else-Quest, Hyde, and Linn, 2010). Since low achievement in mathematics may discourage women from pursuing a career in high paying occupational fields such as engineering, it is conceivable that the inferior mathematics performance of female students contributes to the persistence of the gender wage gap.

This is further corroborated with the findings by Opolot-Okurut (2005) which confirmed gender differences in student confidence and motivation towards sciences. According to Opolot-Okurut (2005) these variables are known to have positive relationship with student achievement. There may be an indication that males perform better than females in sciences as a result of their higher confidence and motivation scores. This concurs with Greenfield (1996) who alleged that female pupils are not confident in mathematics because of their low self-concept in the subject.

**Motivation for girls to study sciences**

In selecting the subjects to study there are many factors, which influence pupils’ choices. The respondents were asked to identify what motivated them to select the science subjects they were doing.
The motivation to study sciences (n=100)

<table>
<thead>
<tr>
<th>Variables</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Other girls studying engineering, mining, medicine and crop science at</td>
<td>55</td>
</tr>
<tr>
<td>universities and colleges</td>
<td></td>
</tr>
<tr>
<td>B. What science career such as engineering, animal</td>
<td>23</td>
</tr>
<tr>
<td>science and medicine can offer on the job market</td>
<td></td>
</tr>
<tr>
<td>C. Encouragement from parents to take up sciences</td>
<td>12</td>
</tr>
<tr>
<td>D. Any other (pressure from peers, brothers and grandparents)</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

A high number of respondents (55%) highlighted that other girls participating in science related careers at higher institutions of learning motivated them to study sciences. This reveals the importance of role models in attracting more girls into the field of sciences. This is similar to a study by Bowman (2007) who found that role models are very important for girls, as they help shape their career identity. If girls have significant adults in their lives like scientists, they may be better able to imagine themselves in that career. A lack of exposure to female scientists and engineers may reinforce the information gap for young women. Bowman, (2007:26) states, ‘Probably because they are not exposed to a lot of role models, so they don’t really see themselves in that role. When they are exposed to female role models, they start thinking about it.’ Bowman (2007) noted that as much as society has changed, there are still preconceptions about what women’s work is and what men’s work is. The importance of role models was also underscored in girls’ selection of careers that they intend to pursue after school as shown in Table 4.

Table 4: Girls’ career choice after school (n=100)

<table>
<thead>
<tr>
<th>Jobs</th>
<th>Form Four (4)</th>
<th>Advanced level</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[n]</td>
<td>(%)</td>
<td>[n]</td>
</tr>
<tr>
<td>Engineer</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Teacher</td>
<td>45</td>
<td>45</td>
<td>4</td>
</tr>
<tr>
<td>Doctor</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Nurse</td>
<td>30</td>
<td>30</td>
<td>8</td>
</tr>
<tr>
<td>Agronomist</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Most of the Ordinary level pupils expected themselves to be teachers (45%) and nurses (30%) which are both considered as feminine jobs in the society. This concurs with the findings from a study by Gordon (1995) who found that gender stereotyping of subjects and career remains pervasive in Zimbabwe. Pupils tend to opt for subjects, which they perceive as pre-requisites of occupations to which they aspire. In general, girls aspire for occupations that are perceived appropriate and fitting for women, nursing, teaching, domestic work, clerical and secretarial work and are excluded from pursuing careers that are considered as masculine (Gordon, 1995; UNICEF, 1995; Asimeng – Boahene, 2006). This is also noted by Klefer and
Sekaqueptew, (2007) who emphasise that stereotypes like, ‘men are naturally more talented and interested in science’ are thought to influence the science, technology and engineering aspirations and achievements of boys and girls, men and women. Thus, female pupils’ perceptions may have their roots in society.

If a sizeable number of female pupils have to be attracted to participate in sciences at Advanced level, role models have to rub shoulders with girls from the elementary stages of learning so that when they see lady engineers, technicians, meteorologists or physics teachers they would perceive them as the norm rather than the exception. This may assist in raising the aspirations of female pupils and develop an interest to venture into the field of sciences after realising that females too have the potential in the subjects regarded as ‘masculine’.

Conclusions
The findings from the study revealed that female secondary school pupils have a negative perception towards participation in Advanced level sciences which can be attributed to lack of confidence. The performance of girls in most science subjects at Advanced level was rated low, as few of them have been awarded prizes for an outstanding performance. However the presence of other girls studying science related careers at universities and colleges motivate girls to pursue Advanced level sciences.

Recommendations
Based on the findings of the study, the following recommendations are proposed to improve the perceptions of female pupils towards participation in Advanced level sciences:

1. Since gender stereotypes impede the involvement of girls in Advanced level sciences, there is need to re-socialise individuals into new order where gender equality is the norm.
2. Programmes to assist in modifying stereotypical conceptions of femininity and masculinity need to be introduced quite early in the school years because behavioural and attitudinal approaches to sexuality are best introduced in early childhood. Children at an early age would realize that they are equal and they grow up with the idea that no sex group is superior or inferior to the other.
3. Further research is needed to compare the most suitable ways of engaging and teaching girls in the sciences so that they develop positive perceptions towards studying Advanced level sciences.

References


